

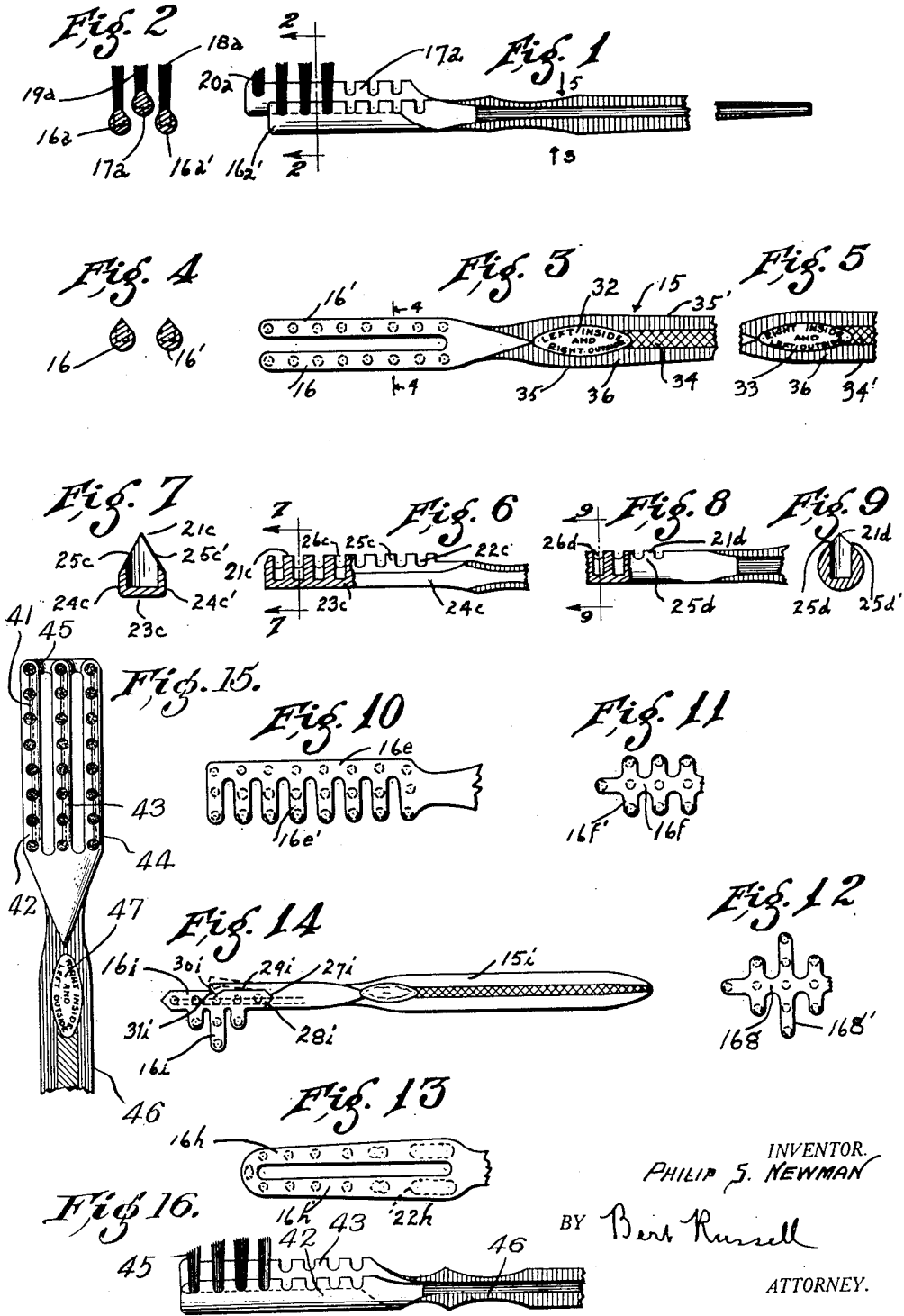
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TOOTHBRUSH

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UNITED STATES PATENT OFFICE

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TOOTHBRUSH

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As may be inferred from the above title, this invention relates to an improvement in brushes; and it is an especial object of this invention to provide, in connection with usual or special handles, open-head tooth brushes whose socket members, suitably disposed for the reception of bristle tufts, are of such cross section and so polished as substantially to prevent lodgment of tooth powder, tooth paste, or the like,—presumably contaminated with bacteria and food residues.

As indicated below, the principles of my invention are capable of application to brush heads of various configurations,—such as two-prong or three-prong or rake-type or triangular or other special brushes; and, regardless of the specific character of the brush head, it is an object of my invention to provide brush handles with oppositely disposed thumb-receiving depressions with suitable legends,—to indicate the manner in which the brush is to be held, for specific effects.

It is a further object of my invention to provide brush handles of usual or unusual configuration, with novel, decorative and distinguishing color effects, as hereinafter described; and it is also an object of my invention, in some forms thereof, to provide open-head brushes with socket members or prongs disposed at various levels relatively to a handle; and/or with prongs provided with tufts of bristles differing in length. That is to say, using bristles of a uniform quality but varying the length thereof, I may provide a desired degree of stiffness by shortening the mentioned bristle tufts,—medium stiffness being obtained by the use of bristles of an intermediate length and softness being obtained by the use of comparatively long bristles.

Other objects of my invention, which may include the provision of an up-turned tip or guard at the outer end of one or more prongs, and which may or may not include the use of a removable brush head, capable of attachment to a handle in either of two alternative positions, may be best appreciated from the following description of illustrative embodiments of my invention, taken in con-

nection with the appended claim and the accompanying drawings, in which:

Fig. 1 may be referred to as a side elevational view with some bristle tufts omitted.

Fig. 2 is a transverse sectional view, taken substantially as indicated by the line 2—2 of Fig. 1.

Fig. 3 is a back view, taken substantially as indicated by the arrow 3 of Fig. 1, but showing an alternative type of brush head.

Fig. 4 is a transverse section, taken substantially as indicated by the line 4—4 of Fig. 3, but on a slightly enlarged scale.

Fig. 5 is a fragmentary view, taken from an opposite direction to Fig. 4, substantially as indicated by the arrow 5 of Fig. 1.

Fig. 6 is a side elevational view, comparable with Fig. 1, but showing a prong or tuft socket member as longitudinally sectioned and showing an interrupted or notched longitudinal edge, in line with said sockets, as elevated relatively to a handle,—parts being broken away.

Fig. 7 is a transverse sectional view, taken substantially as indicated by the line 7—7, of Fig. 6, but on enlarged scale.

Figs. 8 and 9 are respectively comparable with Figs. 6 and 7, being designed to show a slightly different cross sectional type of prong or socket member and a lesser elevation of the interrupted edge, as hereinafter described.

Fig. 10 is a partial back view showing an open head of so-called "rake" type; and Fig. 11 is a similar view showing a brush head of so-called "double-rake" type.

Fig. 12 is a view, comparable with Figs. 10 and 11, suggesting an alternative form of head which may be regarded as comprising a special "double-rake" or as a "double triangle".

Fig. 13 is a view comparable with Figs. 10—12, but showing a head in which outwardly diminishing prongs are so united as to form a loop,—said prongs disclosing an optional inward increase in diameter and a corresponding increase in the size of the tufts secured therein.

Fig. 14 may be referred to as a back view of a slightly more complicated embodiment

of my invention in which an open head, substantially triangular in general outline, is provided with means permitting its removal and reversal, as hereinafter described,—an alternative position of a latch element being indicated in dotted lines.

Fig. 15 is a front view of a top portion of a form of my improved toothbrush, which incorporates many of the ideas shown in Figs. 1, 2, 3 and 13 in a single embodiment.

Fig. 16 is a side view of the embodiment of Fig. 15.

It will be seen that the brush head shown in Figs. 1 and 2 differs from the two-prong form shown in Fig. 3 mainly in the fact that the latter form includes, in a usual relationship to a special handle 15, a single pair of suitably spaced and substantially parallel prongs or tuft socket members 16—16', whereas the form shown in Fig. 1 includes an upwardly or forwardly disposed intermediate prong 17a, interposed between slightly lower (and optionally shorter) side prongs 16a—16a'.

The said intermediate prong, when disposed above (rather than below) the side prongs may be equipped with a row of bristle tufts 19a rendered comparatively stiff by such a shortening of the same as brings their free ends into substantially the same plane with the free ends of tufts 18a carried by the prongs 16a, 16a'; and, if desired, the last tuft or tufts at one end of one or more of the prongs may be rendered still more stiff and durable, in view of the exposed position thereof, by being further shortened, as compared with other tufts on the same prong; and the terminal tuft or tufts referred to may be protected by suitable guard tips, somewhat as suggested at 20a, Fig. 1.

Although I may arrange the prongs or tuft-socket members referred to in various ways, as hereinafter described, and although I may also relate handles thereto in various ways, I consider it of great advantage to give to the mentioned prongs or to any socket members used in an open-head brush substantially such a cross sectional outline as is illustrated in Fig. 7, or an outline resembling that in Fig. 9, or some similar or intermediate configuration adapted to prevent any lodgment of material thereon. As best shown in Figs. 1 and 6, the respective prongs of a two-prong brush, or an intermediate prong or prongs of a more complex brush, may be so molded or cut as to provide the front face thereof with a comparatively sharp edge of the general character illustrated at 21c', this edge (whether produced by molding or by such a grinding and polishing of adjacent surfaces as contributes to the sharpness of said edge) being interrupted by cylindrical or other tuft socket 22c. If desired, the back surface 23c of any prong may be substantially flat and the side surfaces 24c, 24c'

thereof may be so molded or grounded and polished as to provide convergent uniform adjacent faces such as are indicated at 25c and 25c',—so that the mentioned sockets 22c appear as a series of notches in the last mentioned surface,—as also in the mentioned edge 21c, when the latter is viewed in profile.

Even though, as suggested at 21d in Figs. 8 and 9, the mentioned edge be disposed at about the same level or below the corresponding surface of a brush handle, and even though some or all of the prongs of a plural-pronged brush be so rounded as to provide a substantially ovoidal cross sectional outline, it should be understood that upwardly convergent surfaces such as are shown at 25c—25c' and at 25d—25d' are intended to meet at a decidedly acute angle and to be so uniformly shaped that the provision of the mentioned sockets implies a notched effect such as is best shown at 26c and 26d,—the tuft sockets being of sufficient depth to retain their respective tufts notwithstanding an apparent deficiency of lateral support in the regions of the respective interrupted edges referred to. The bristle tufts may be secured in the described sockets, presumably circular in cross sectional outline, in any usual or preferred manner,—as by drawing or stapling,—the mode of attachment thereof, presumably after a polishing of the prongs, being immaterial to my present invention.

I am aware that brushes have heretofore been provided with open backs and/or with rather narrow prongs, but I am unacquainted with any brush in which the reduction of lodgment surface has been carried to the limit above described,—level lodgment surfaces being entirely avoided.

By way of illustrating the applicability of the principles of my invention to other open-back brushes, I show in Figs. 10 and 11 respectively a so-called "rake-type" brush and a so-called "double-rake-type" brush,—the former comprising a longitudinally extending prong 16e from which subsidiary prongs 16e' extend substantially at right angles and the latter comprising a central prong 16f from which tooth-like subsidiary prongs 16f' extend in opposite directions.

In the form illustrated in Fig. 12, above referred to as a special "double-rake" or "double triangle" brush, unequal subsidiary prongs 16g' extend symmetrically from a central prong 16g; and in Fig. 13 I suggest the applicability of the principle of my invention to a "loop" brush. This may be thought of as comprising a single prong of hair-pin shape or as produced by uniting the outer ends of outwardly diminishing or other prongs 16h, 16h',—the illustrated prongs being provided with tuft sockets 22h which increase in diameter in the direction of the

handle, some being molded "double" and others elliptical.

Although all of the above described brushes are shown as provided with integral handles, I suggest in Fig. 14 the possibility of detachably connecting a triangular or other brush comprising a main prong 16 $\frac{1}{2}$ ' and subsidiary prongs 16 $\frac{1}{2}$ ' to a suitable handle, such as, for example, a handle 15 $\frac{1}{2}$,—shown as provided with an interfitting face or socket 27' and both with a cylindrical or other projection 28 $\frac{1}{2}$ ' adapted to enter a corresponding longitudinal opening in the prong 16 $\frac{1}{2}$ ' and with a resilient or other latch element 29 $\frac{1}{2}$ '. The latter is shown as provided with a detent 30' adapted to so enter a substantially central notch 31 $\frac{1}{2}$ ' in the prong 16 $\frac{1}{2}$ ' as to permit the described head to be reversed upon the disclosed handle.

Although various features of the invention which I have above described are capable of use in connection with any suitable handle, I prefer to employ therewith handles of the general character best disclosed in Figs. 1, 3 and 14. In each of the figures last referred to I show a slightly bent or comparatively straight handle as provided upon each of its larger surfaces with a thumb depression,—the thumb depression 32 upon the back of each brush being optionally provided with a directive legend such as is shown in Fig. 3, and the opposite depression 33 being then provided with a supplemental legend such as is suggested in Fig. 5. These legends, whether applied to the mentioned depressions or elsewhere upon the surfaces referred to, may serve to direct the juvenile or other user as to the best manner of positioning the thumb for the proper cleansing of the respective surfaces of the upper and lower rows of teeth.

To contribute to the sanitary effect referred to, the prongs of all my brushes may be individually polished; and, to contribute to the attractiveness of my brushes, and to aid users thereof in easily identifying the same, I propose to polish not only the mentioned prongs but other parts; and to provide said heads and/or respective longitudinal areas of the mentioned handles with different but harmonious colors or shades,—ordinarily providing one color upon the central back and front areas 34, 34', another color upon side areas 35, and a third color upon intermediate areas 36,—so that not less than three colors may be seen from any angle. If desired, more than three colors may be employed, but by varying the shades and arrangement thereof, I can obtain sufficient variety by the use of three colors or shades.

In Fig. 15, Fig. 16 I show a form of tooth brush that embodies many of the advantages of some of the other forms discussed. Thus it has the narrow edges 41 to prevent lodgment of dirt. It is of the loop type, having

three bristle socket members 42, 43, 44, the center member 43 being raised above the other two. Each member 42, 43, 44, has a guard tip 45. It also includes the three colored handle 46, and the legend portion 47, to instruct the novice in the use of the brush.

Although I have described several alternative embodiments of my invention, it will be understood not only that various features thereof may be independently employed, and that the principles of my invention are applicable to brushes other than tooth brushes, but also that numerous modifications, additional to those herein referred to, might easily be devised by workers skilled in the arts to which this case relates,—without involving the slightest departure from the spirit and scope of this invention, as the same is indicated above and in the following claim.

I claim:

A tooth brush comprising a handle, and tuft-socket members connected with said handle,—the face of each of said socket members being reduced substantially to an edge interrupted by suitable tuft sockets, and adjacent faces of said socket members being so convergent that said sockets give said edge a notched profile.

In witness whereof, I have hereunto affixed my signature.

PHILIP S. NEWMAN.